Claims

1. An easy-tear, halogen-free winding tape composed of a film layer and of an adhesive layer, the film comprising a copolymer of

(a) α-olefin of the formula R-CH=CH_2, where R is hydrogen or an alkyl radical having 1 to 10 carbon atoms, and

(b) an α,β-ethylenically unsaturated carboxylic acid of 3 to 8 carbon atoms, and

(c) optionally a further monoethylenically unsaturated monomer, 10 to 90% of the hydrogen atoms of the carboxylic acid groups of the copolymer being substituted by metal ions as a result of neutralization.

2. The winding tape of claim 1, characterized in that the metal ion of the copolymer is monovalent to trivalent and comes preferably from groups I, II, III, IV-A and VII of the Periodic Table, more preferably from the alkali metals of the group, particularly sodium.

3. The winding tape of at least one of the preceding claims, characterized in that the fraction of copolymer is at least 10% by weight and preferably at least 50% by weight.

4. The winding tape of at least one of the preceding claims, characterized in that the film layer has been produced by blown-film extrusion.

5. The winding tape of at least one of the preceding claims, characterized in that
the longitudinal draw ratio (ratio of film winding speed to melt speed in the die) is 2 to 25, preferably from 5 to 10,
the frost line is smaller than 160 cm,
the longitudinal draw ratio divided by the frost line is greater than 0.1 cm^{-1}, preferably greater than 0.2 cm^{-1}
the blow-up ratio is situated in the range from 1 to 4, preferably from 1.8 to 2.5, and/or
the die gap is situated in the range from 1 to 1.6 mm.

6. The winding tape of at least one of the preceding claims, characterized in that the tensile strength by the method of Elmendorf in the machine direction is at least twice, preferably at least four times, the tensile strength in the cross direction.

7. The winding tape of at least one of the preceding claims, characterized in that film layer thickness is from 30 to 180 µm, in particular 55 to 100 µm, force at 1% elongation in machine direction is 0.6 to 4 N/cm, force at 100% elongation is from 5 to 20 N/cm, breaking elongation is 200 to 1000%, preferably 30 to 400%, tensile strength is 6 to 40, preferably 8 to 15 N/cm and/or breakdown voltage is at least 5 kV/100 µm.

8. The winding tape of at least one of the preceding claims, characterized in that there is a primer layer between film layer and adhesive layer, the amount of the adhesive layer is 10 to 40 g/m^2, preferably 18 to 28 g/m^2, the bond strength to steel is 1.5 to 3 N/cm, the unwind force is 1.2 to 6.0 N/cm at 300 mm/min unwind speed, preferably 1.6 to 4.0 N/cm, more preferably 1.8 to 2.5 N/cm, and/or the holding power is more than 150 min.

9. The winding tape of at least one of the preceding claims, characterized in that the winding film comprises a solvent-free pressure-sensitive adhesive which is produced by coextrusion, melt coating or dispersion coating, preferably a pressure-sensitive dispersion adhesive, this adhesive being joined to the surface of the carrier film by means of flame or corona pretreatment or of an adhesion promoter layer which is applied by coextrusion or coating.

10. The winding tape of at least one of the preceding claims, characterized in that the pressure-sensitive adhesive is polyacrylate-based.

11. The winding tape of at least one of the preceding claims, characterized in that it is black.

12. The winding tape of at least one of the preceding claims, characterized in that the winding film is plasticizer-free or the plasticizer content is so low that the fogging number is above 90%.

13. The winding tape of at least one of the preceding claims, characterized in that the film layer has been produced by calender processing, in which case the melt index of the copolymer is below 5 g/10 min, preferably below 1 g/10 min and in

particular below 0.7 g/10 min, and/or extrusion processing, in which case the melt index of the copolymer is between 0.2 and 10 g/10 min, in particular between 0.5 and 5 g/10 min.

14. The winding tape of at least one of the preceding claims, characterized in that the copolymer-containing film layer has been blended with a further polymer, in particular an ethylene-based polymer.

15. The winding tape of at least one of the preceding claims, characterized in that the copolymer-containing film layer has been coextruded with a further film layer which comprises a polymer, in particular an ethylene-based polymer, the polymer having a melt index of preferably less than 10 g/10 min, in particular less than 6 g/10 min.

16. The winding tape of at least one of the preceding claims, characterized in that at least one layer of the winding tape has been crosslinked, preferably by ionizing radiation or by modification of a polymer with silane groups.

17. A process for producing a winding tape of at least one of the preceding claims, wherein

- the winding film is wound to logs, which then, to increase the unwind force, are conditioned by heat treatment and subsequently slit into rolls, the unwind force of the material thus produced at 300 mm/min being higher preferably by at least 50% than without such a measure, or
- the winding film, for the purpose of increasing the unwind force, is subjected to a flame or corona treatment or is provided with a polar coextrusion layer and is subsequently processed into rolls, the unwind force of the material thus produced at 300 mm/min being higher preferably by at least 50% than without such a measure, or
- the winding film is slit by a process which leads, as a result of rough slit edges, to easier hand tearability, the breaking elongation of the winding-film rolls thus slit being lower preferably by at least 30% than in the case of slitting with sharp blades,
- the winding film is slit on an automatic slitter with defined knife advancement speed,
- the winding film is wound on a core with an inside diameter of 30 to 40 mm,

preferably of board.

18. The use of a winding tape of at least one of the preceding claims for bundling, protecting, labeling, insulating or sealing ventilation pipes or wires or cables and for sheathing cable harnesses in vehicles or field coils for picture tubes.

19. An easy-tear, halogen-free winding tape composed of a film comprising a copolymer of

(a) α-olefin of the formula $R\text{-}CH{=}CH_2$, where R is hydrogen or an alkyl radical having 1 to 10 carbon atoms, and

(b) an α,β-ethylenically unsaturated carboxylic acid of 3 to 8 carbon atoms, and (c) optionally a further monoethylenically unsaturated monomer, 10 to 90% of the carboxylic acid groups of the copolymer having been ionized as a result of neutralization with metal compounds.